

## Editorial

### Combustion Science - Achievements and Challenges in 21<sup>st</sup> Century

Combustion has been the main source of energy for mankind for a very long time now. During this period, combustion science has made many remarkable discoveries and combustion research has resulted in better cars, more efficient power stations, the reduction of pollution levels and even in our ability to reach other planets. Although the energy situation in the world is rapidly changing, it seems that combustion will still remain our main energy source in the foreseeable future. Given the increasing public awareness of the environmental, economic and geopolitical aspects associated with the burning of fossil fuels it is inevitable that the sources of energy will need to be diversified and new fuels will have to be introduced into the market. This special issue of The Open Thermodynamics Journal contains articles which review some of the achievements of combustion science, in theory and modelling, and in the improvement of device efficiency, and which examine some of the major challenges that combustion science faces in the coming decades.

Three of the articles in the special issue are based on presentations given at the Australian Combustion Symposium (ACS) held from 2nd - 4th December 2009 at The University of Queensland, Australia. The Symposium was organized by Alex Klimenko and Matthew Cleary (the Guest Editors of this special issue) along with others from The University of Queensland and The University of Southern Queensland - Bo Feng, Victor Rudolph, Russell Boyce, Andrew Wandel and Rose Clements. Occurring biennially, the Symposium brings together local and international combustion scientists and young researchers from academia and industry, and it provides a forum for the presentation of a wide range of papers in all aspects of fundamental and applied combustion science. The papers included into this special issue represent the different major research areas that featured at the ACS. The paper by E. Knudsen and H. Pitsch stems from the ACS Bilger Lecture, while the paper by V. Bykov and U. Maas is derived from the ACS invited review of reduction methods for chemical kinetics. The paper by H. Ogawa *et al.* represents the area of Hypersonic Combustion, which was widely covered at the ACS. In addition, the Guest Editors asked J.C. Jones, the journal's Editor-in-Chief, to write a more general article that provides an overview of the past, present and future of combustion engineering. All of the articles published in the issue were accepted after the normal rigorous peer review process that is applied by this journal.

#### **Dr. A. Y. Klimenko and Dr. Matthew Cleary** (Guest Editors)

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